

Epidemiology of Heart Failure in Asia



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KEYWORDS

- Hospitalized heart failure • Site selection • Time frame • Ethnicity
- Guideline-directed medical therapy • Mortality

KEY POINTS

- The following key issues regarding the comparison between epidemiologic studies should be considered: (1) definitions of heart failure (HF) in registries of patients hospitalized for HF, (2) site selection, (3) time frame, and (4) ethnic differences.
- Asian patients with HF are younger and more ethnically different, and the proportion of de novo cases is relatively higher in Asian patients with HF than in Western patients with HF.
- Asian patients with HF have still not received guideline-directed medical therapy (GDMT) well, especially β -blockers at discharge.
- The outcome of Asian patients with HF was poor and almost similar to that of Western patients with HF.

INTRODUCTION

HF is increasing in prevalence and is a public health problem in the Western countries as well as in Asia. The most critical issues of HF are high mortality and readmission rates. However, epidemiologic studies in Asia have not been well conducted to clarify the present status of HF management. From the overview of the studies regarding HF in Asia, the prevalence of HF is 1.2% to 6.7% depending on the population studied.^{1–4} In China, there are 4.2 million patients with HF and 500,000 new cases are being diagnosed each year.⁵ In Japan, it is estimated that there are 1.0 million patients with HF and the number of outpatients with left ventricular dysfunction is predicted to gradually increase to 1.3 million by 2030.⁶ Thus, epidemiologic data for HF are essential to improve the incidence and outcome of HF. However, there are several concerns when the patient characteristics and management are compared among countries. Definitions of HF,

differences in sites, the time frame when the registry was performed, and ethnic differences should be clarified. Also, especially in Asia, the status of economic situation and life styles, which are quite different from those of Western countries and even between Asian countries, should be considered. Based on these considerations, the results of comparison of characteristics and management of patients with HF in Asian countries should be taken into account.

IMPORTANT ISSUES FOR EPIDEMIOLOGIC COMPARISON

Definitions of Heart Failure in Registries of Patients Hospitalized for Heart Failure

In HF registries, it is important to clarify the definition of HF. **Table 1** shows the definition of HF in representative registries of patients hospitalized for HF in the United States, Europe, and Asian countries.^{7–13} Actually there are studies in which the definition of HF was not clarified.

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Table 1
Definition of HF in registries of patients hospitalized for HF

Study	Country or Region	Definition
ADHERE ⁷	United States	ICD-9 codes related to HF
OPTIMIZE-HF ⁸	United States	ICD-9 codes related to HF
EHFS II ⁹	Europe	(1) Symptoms (dyspnea) and signs (ie, rales, hypotension, hypoperfusion, right ventricular HF) of HF and (2) lung congestion on chest radiograph
ADHERE International-Asia Pacific ¹⁰	Asia Pacific (Singapore, Thailand, Indonesia, Australia, Malaysia, Philippines, Taiwan, Hong Kong)	ICD-9 or ICD-10 codes related to HF
KorHF registry ¹¹	Korea	Framingham criteria
KorAHF registry ¹²	Korea	Signs or symptoms of HF and one of the following criteria are eligible for the study: (1) lung congestion or (2) objective findings of LV systolic dysfunction or structural heart disease. Lung congestion has been defined as congestion on a chest radiograph or as rales on physical examination
ATTEND registry ¹³	Japan	Modified Framingham criteria

Abbreviations: ADHERE, Acute Decompensated Heart Failure National Registry; ATTEND, Acute Decompensated Heart Failure Syndromes; EHFS II, EuroHeart Failure Survey II; ICD, *International Classification of Diseases*; KorAHF, Korean Acute Heart Failure; LV, left ventricular; OPTIMIZE-HF, Organized Program to Initiate Lifesaving Treatment in Hospitalized Patients with Heart Failure.

Especially in the registries that include patients with HF with left ventricular preserved ejection fraction (HF-PEF), it is important to clarify the definition of HF-PEF. It will be meaningless to compare the data from the HF registries without the definition of HF. Furthermore, the interpretation of comparison between registries with different definitions of HF should be done with caution. Therefore, future registries should use the same definition of HF, such as the definition of HF suggested by the European Society of Cardiology Guidelines for the diagnosis and treatment of acute and chronic HF 2012.¹⁴ The diagnosis of HF-reduced ejection fraction (EF) requires the following 3 conditions: (1) symptoms typical of HF, (2) signs typical of HF, and (3) reduced left ventricular (LVEF). The diagnosis of HF-PEF requires the following 4 conditions: (1) symptoms typical of HF, (2) signs typical of HF, (3) normal or only mildly reduced LVEF and left ventricle (LV) not dilated, and (4) relevant structural heart disease (LV hypertrophy/left auricular enlargement) and/or diastolic dysfunction. In the analysis of large database, for example, national database, the *International Classification of Diseases, Tenth Revision* (ICD-10) codes might be best to define HF.

Site Selection

Patient characteristics are different between sites. Site selection should be decided according to the aim of registry. In a registry collecting the real-world data of the patient characteristics and management in each country or region, balanced, which means that participating sites consist of both academic and nonacademic ones, sites and regions must be included. For example, in the Acute Decompensated Heart Failure National Registry (ADHERE), the sites were selected to represent academic and nonacademic ones as well as the well-balanced geographic regions of the United States.⁷

The Time Frame

The time frame when the registry was performed is also important for comparison of HF data between countries. In China, the causes of HF markedly changed during past 2 decades, that is, a decrease in the proportion of valvular heart disease due mainly to rheumatic fever and an increase in the proportion of ischemic heart disease.¹⁵ Thus, the time frame should be considered for comparison between countries. On the other hand, the trends of characteristics and

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